Part 3.
Implementing the Natural Area Preserves Act

In passing the Natural Area Preserves Act, the Legislature recognized the need for a systematic and objective approach to guide inventory and protection efforts. It was interested in both effectiveness (protecting those features most at risk) and efficiency (avoiding unnecessary duplication of protection effort). The Natural Heritage Program was established to provide the systematic and objective approach.

The methodology used by the Natural Heritage Program was developed by The Nature Conservancy. Today, it is shared by a network of more than 75 Natural Heritage Programs located in all 50 states, in several Canadian provinces, as well as in several Latin American and Caribbean countries. The network is known as NatureServe.

Natural Heritage methodology consists of three steps: classification, inventory, and conservation planning. These steps are actually an ongoing and iterative process. Classification, inventory, and conservation planning are repeated as more information is collected and natural features are successfully protected.

The application of the methodology to the selection of natural areas is designed to be as objective as possible; it is intended to result in the highest priority species and ecosystems being targeted for conservation actions. For a list of priority species and ecosystems in Washington, see the Natural Heritage Program website at www.dnr.wa.gov (click on site map/index).

NATURESERVE — "A NETWORK CONNECTING SCIENCE WITH CONSERVATION"

- Consists of Natural Heritage Programs / Conservation Data Centers in all 50 states, Canadian Provinces and several Latin American and Caribbean countries
- All use same methodology for assessing rarity and setting conservation priorities
- Allows for sharing of information and consistency of conservation efforts across political boundaries
- www.natureserve.org

◀ Natural Heritage Advisory Council visit to Dailey Prairie NAP in Whatcom County.

Classification

Natural Heritage methodology begins with classification – a process to identify the priority biological features within the state, essentially creating the "shopping list" of species and ecosystems that will become the object of conservation efforts. A "coarse filter / fine filter" approach is used. The coarse filter consists of all of the ecosystems (both terrestrial and aquatic) occurring within the state. Targeting ecosystems for specific conservation efforts is important for a number of reasons. Each ecosystem type constitutes a unique set of relationships among its component species, and these relationships help create and define the various ecological processes that influence individual species. Conservation efforts, if they are to be successful, must account for these relationships and processes. In addition, it is assumed that if representative examples of all the coarse filter ecosystems are protected, then most common species would be conserved as well.

However, some species, such as the golden paintbrush or the pygmy rabbit, are rare or occur only in specific habitats. These species may not be adequately protected by using only the coarse filter. To ensure that these "special species" are identified for protection, they are identified as high priorities in their own right. They constitute what is referred to as the "fine filter."

Establishing clear priorities for species and ecosystems is critical to building a strong natural areas system. By using the objective methodology of the Natural Heritage Program, both effectiveness and efficiency in selecting the most important sites can be achieved. Although the criteria for assigning priorities for species and ecosystems are similar, there are some differences. Each is discussed separately below.

Criteria for Determining Species Priorities

The primary tool used to develop priorities for individual species is the global and state ranking system used by NatureServe and its member Natural Heritage programs. The ranking system facilitates a quick assessment of a species' rarity. Each species is assigned both a global (G) and state (S) rank of 1 to 5. The global ranks are assigned through a collaborative process involving both NatureServe and individual Natural Heritage Program scientists. State ranks are assigned by scientists within the individual Natural Heritage programs.

G1, for example, indicates critical imperilment on a global basis; the species is at great risk of extinction. S1 indicates critical imperilment within a particular state (in our case, Washington), regardless of its status elsewhere.

A number of factors, such as the total population size, the number of occurrences, threats, etc., contribute to the assignment of global and state ranks. The information supporting these ranks is developed and maintained by the Natural Heritage Program and NatureServe.

For individual species, the global and state ranks are used as the starting point in the process of assigning priorities. Figure 10 illustrates the possible combinations of global and state ranks. This matrix is used as the framework for assigning priorities, as indicated by the color-shaded blocks within the matrix.

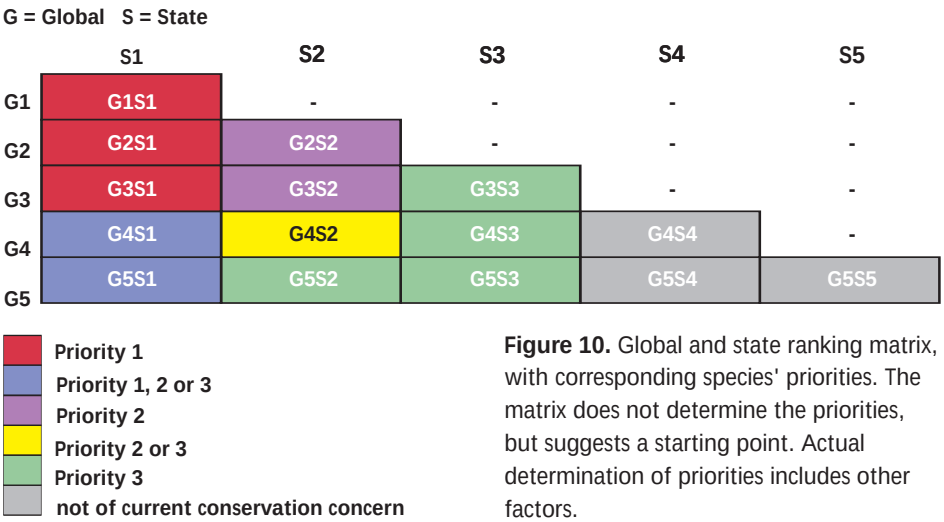

Figure 10. Global and state ranking matrix, with corresponding species' priorities. The matrix does not determine the priorities, but suggests a starting point. Actual determination of priorities includes other factors.

It is important to note that the matrix is used as a guideline only. A number of factors are considered for each species prior to final assignment of a priority. These factors are used to either elevate or lower the priority of individual species. Factors include:

- Is the species suspected of being more widespread than the data indicate?
- Does the distribution pattern (local endemic, peripheral, disjunct, isolated populations, etc.) convey more or less concern?
- Are demographic issues (small populations, declining populations, poor reproduction, etc.) significant?
- Are habitat issues (habitat declining, dependence on natural disturbance, habitat restricted but not threatened, etc.) significant?

Using the above matrix (Figure 10) and modifying factors, each rare species has been assigned one of the following priority rankings:

Priority 1: These species are in danger of extinction across their range, including Washington. Their populations are critically low or their habitats are significantly degraded or reduced.

Priority 2: These species may become endangered across their range or in Washington if factors contributing to their decline or habitat loss continue.

Priority 3: These species are vulnerable or declining and could become endangered or threatened throughout their range without active management or removal of threats to their existence.

GLOBAL AND STATE RANK DEFINITIONS

1 = critically imperiled

2 = imperiled

3 = vulnerable to extirpation or extinction

4 = apparently secure

5 = demonstrably widespread, abundant, and secure

Global and state ranking of species considers the following:

- Total number and condition of occurrences
- Total population size
- Range and extent of area occupied
- Short- and long-term trends in the factors above
- Threats
- Fragility

Criteria for Determining Ecosystem Priorities

Global and state ranks have been assigned to all terrestrial ecosystems and some of the wetland and aquatic ecosystems. Marine ecosystems have not as yet been assigned global or state ranks. Primary ranking factors for ecosystems are:

- the number of occurrences, and
- the total acreage occupied by the ecosystem type.

Secondary ranking factors include:

- geographic range of the ecosystem type,
- long-term trend of the ecosystem across this range,
- short-term trend,
- degree of site/environmental specificity exhibited by the ecosystem type, and
- threats.

There is not a straightforward correlation between global and state rank and Plan priority, as there is with species. Ecosystem priorities for the Plan are based on three criteria:

- how adequately the ecosystem type is represented in the natural areas system,
- rarity of the ecosystem type, and
- degree of threat to the ecosystem type.

▲ Serpentine grassland with Rocky Mountains juniper on Fidalgo Island.

The task of adequately conserving all ecosystems in Washington is considerably greater than getting representation of all ecosystems in the natural areas system. That is, representation is a more immediate, and achievable, goal than is conservation. And, as stated throughout this plan, achieving conservation of all of our native ecosystems (and species) will require use of all available conservation tools. Natural areas are meant to provide protection for the best quality representative examples. Not only do these examples contribute to conservation, but they are meant as baseline reference sites to be used to help guide management and restoration of other areas.

Adequacy of Representation

Determining how adequately an ecosystem type is represented in the natural areas system involves a complex analysis. The occurrences of each ecosystem type that are protected within natural areas are analyzed from the perspective of:

Ecological quality
Does the ecosystem occur in an essentially natural condition?

Diversity
How much of the ecosystem's range of natural variation occurs in the natural area system? For example, the big sagebrush/bluebunch wheatgrass community incorporates a wide range of variation in species

composition and environmental parameters. The occurrence of this ecosystem at the Rattlesnake Hills RNA represents a dry, southern version of the community that differs in many ways from occurrences further north in less dry climates.

Ecological viability
Do the size, shape, boundary conditions, location and biological properties of the ecosystem within the protected area ensure its persistence?

For an ecosystem to be considered adequately represented, there must be occurrences within the natural areas system that are viable, relatively natural in their condition, and which represent the range of natural variation of that ecosystem type.

Rarity of Ecosystem Type

The determination of rarity is derived from analysis of information contained in the Natural Heritage Information System. It is determined by assessing the ecosystem's geographic distribution, the relative degree of loss or degradation since pre-settlement times, and the number of verified, high-quality occurrences remaining in the state and, in some cases, adjoining states amd British Columbia.

Degree of Threat

Threat is defined by the known or anticipated activities that are degrading or destroying the ecosystem within Washington, the rate at which these are occurring, the ecosystem's ecological fragility, and the ecosystem's remaining undisturbed habitat. Threats may be lessened by protection policies or management activities on public lands that are not part of the natural areas system, e.g., parks, wildlife areas, etc.

Assigning Priorities

Using the guidelines listed, all terrestrial, wetland and aquatic ecosystem types are assigned one of the following representation priority rankings:

Representation Priority 1
These ecosystems usually have little or no representation in the natural areas system, little or no representation on other public lands, and appear to be in the greatest jeopardy of being destroyed or degraded. These ecosystems have often been greatly reduced in their extent and typically have very few known occurrences in their natural condition.

Representation Priority 2
These ecosystems are intermediate in priority. Typically, they involve one of the two following situations: rare or highly threatened (similar in this respect to Representation Priority 1) that have some existing, but not fully adequate, representation in the natural areas system; or ecosystems with an intermediate degree of threat and rarity that have little or no representation in the system. Ecosystems with an intermediate degree of rarity generally have few occurrences in a natural condition.

Representation Priority 3
These ecosystems are of lower priority, generally because they are not in immediate jeopardy of being eliminated or degraded in the state, but are not yet adequately represented in the natural areas system. These ecosystems are typically not rare or threatened. They are often protected de facto on other public lands (especially national parks and wilderness areas), but are not represented in the natural areas system. This category also includes ecosystems that are in intermediate danger of being extirpated (like Representation Priority 2) and have some significant, but not fully adequate, representation in the natural areas system.

Representation Priority *
These ecosystems are no longer a priority for inclusion in the natural areas system because of existing adequate representation in the system. These may include rare or threatened ecosystems, if natural areas have been established that represent the range of variation for that ecosystem in relatively natural, viable conditions. For example, Coastal spit with native vegetation is adequately represented in the preserve system with three occurrences, but remains a very rare ecosystem that merits consideration for other types of conservation activity on the remaining occurrences outside the natural areas system.

Representation Priority +
These priority ecosystems occur within proposed natural areas. Once these areas are formally designated, the ecosystems will be considered adequately represented in the natural areas system. These ecosystems represent varying levels of rarity or threat and will be Representation Priority * once the proposed natural areas are established.

Inventory

The priority species and ecosystems that are identified through the above processes are the focus of the inventory efforts of the Natural Heritage Program. As inventory information is gathered, it is also incorporated into the status assessments for species and ecosystems. New information often results in status changes. The inventory information is also the foundation for conservation planning efforts, including the identification of potential natural areas.

Natural Heritage Inventory System

- Contains more than 7,600 locations of priority species and ecosystems
- Includes extensive information on the biology and ecology of the species and ecosystems
- Consists of both tabular and GIS data
- Is available in a variety of formats for conservation planning purposes

▲ Natural Areas scientist gathering data at Upper Dry Gulch NAP in Chelan County.

Conservation Planning: Selection of Potential Natural Areas

Prospective natural areas are assessed from two different standpoints: the occurrence of priority species and ecosystems within the site, and the site as a whole. This approach ensures that the biologically important sites are considered for conservation efforts.

Species / Ecosystem Occurrence Analysis

Each priority species or ecosystem occurrence within a prospective site is compared with all other known occurrences to ensure that those being considered for inclusion within a natural area are healthy and viable. The goal is to provide protection for the best remaining examples. In the case of ecosystems, the degree to which the occurrence is a good representative example of that ecosystem type is also assessed.

Condition, size, and the landscape context of priority species or ecosystems occurrences are ranked and considered in relation to that of other known occurrences. Condition refers to the species composition of the ecosystem or habitat, the functioning of natural processes within the ecosystem, the appropriateness of habitat for a species, and the relative maturity of ecosystem development. Size refers to population size for species and area covered for ecosystems. Landscape context refers to the condition of the landscape surrounding and affecting the occurrence.

Site Analysis

The site analysis emphasizes ecological quality, diversity and ecological viability as characteristics of the site as a whole. Two key questions must be satisfactorily answered: (1) does the site adequately protect the species and/or ecosystem occurrences against unnatural encroachments, and (2) can the site be successfully managed to maintain the primary species and/or ecosystems? If natural disturbance is a key component of an ecosystem, whether or not our management can accommodate or mimic such disturbances must be assessed.

The analysis of the priority species and ecosystems is typically conducted by Natural Heritage Program scientists. The analysis of the site as a whole involves staff from the Natural Heritage and Natural Areas programs, as well as staff of the agency and unit that will ultimately be responsible for site management. In the case of sites that will be managed by DNR, appropriate region personnel play a major role in the assessment.

A primary consideration in the selection of natural areas is the presence of more than one species or ecosystem type in a prospective site. In some instances (for example, sites with endangered species occurrences or a site with the only known example of a natural community), the presence of a single species or ecosystem may be sufficient to warrant establishment of a natural area.

TABLE 1. EVALUATION CONSIDERATIONS FOR NATURAL AREAS – KITSAP FOREST AS AN EXAMPLE

Species / Ecosystems Occurrence Considerations

Species / Ecosystem Name	NH Plan Priority	Condition	Size	Landscape Context
Douglas-fir – western hemlock / evergreen huckleberry forest ◆	2	Good	Good	Fair
Douglas-fir – western hemlock / Pacific rhododendron forest ◆	2	Excellent	Fair	Fair
Western hemlock / swordfern forest	2	Good	Poor	Fair
Low elevation stream	1	Fair	Poor	Good
Low elevation freshwater wetland	1	Fair	Poor	Good

◆ These ecosystem types were the primary features of interest driving the proposal to create Kitsap Forest NAP.

Site Considerations – Natural Area as a Whole

Ecological quality	high
Diversity	moderate
Ecological viability	high
Defensibility	high
Manageability	high
Accessibility ◆◆	high

◆◆ Since one of the purposes of establishing natural areas is to create a system of sites for research, whether or not the sites are reasonably accessible is a factor to be considered.

However, it is clearly a more efficient use of public and private resources to select sites with more than one priority feature, thereby potentially reducing the total number of sites necessary to adequately protect the state's biodiversity. Columbia Falls Natural Area Preserve is a good example of a site containing several elements, including two terrestrial ecosystems, two aquatic ecosystems, and eight rare species (seven plant species and one animal species).

The various factors that are considered in the analysis of potential natural areas are shown in Table 1, an example from the Kitsap Forest NAP.

Natural Heritage Advisory Council

For those sites that emerge from the analyses as prospective natural areas, a site recommendation is prepared and presented to the Natural Heritage Advisory Council (Council). The Council was established by RCW 79.70.070. As implied by its name, the Council advises DNR regarding implementation of the Natural Area Preserves Act. One of the primary functions of the Council is review of potential Natural Area Preserves and Washington Register of Natural Areas sites. Based on their evaluation, the Council approves or rejects recommended sites, and so advises DNR or other appropriate agency (e.g., State Parks or WDFW).

The Council also has two additional major functions:

- providing guidance regarding management of natural areas
- directing DNR staff in the revisions to the State of Washington Natural Heritage Plan

The Council has 15 members, including five state agency representatives. Ten members are appointed by the Commissioner of Public Lands and serve four-year terms. Five of the ten members must be recognized experts in the ecology of natural areas. Of the remaining five members, at least one must be or represent a private forest landowner and at least one must be or represent a private agricultural landowner.

The five non-voting ex-officio members are the directors of the Department of Fish and Wildlife and the Department of Ecology; the supervisor of the Department of Natural Resources; and the directors of the State Parks and Recreation Commission and the Interagency Committee for Outdoor Recreation; or their authorized representatives.

The Council, through its review and recommendations, ensures that high quality sites are preserved and that sound management practices are implemented to maintain them.

Public Hearing / Commissioner of Public Lands

For those sites that are intended to be acquired and designated as natural areas by DNR, a public hearing must be held in the county where a majority of the land in a proposed natural area is located. The information gained from the public hearing, along with the site recommendation, is forwarded to the Commissioner of Public Lands for review and potential approval.

DNR's Special Lands Acquisition Program

For those sites that are approved by the Council and the Commissioner of Public Lands, and where DNR is the intended managing agency, DNR staff begin the process of attempting to acquire the lands involved. DNR's Special Lands Acquisition Program is responsible for purchasing land that has been approved for Natural Area Preserve (NAP) and Natural Resources Conservation Area (NRCA)

status. The program evaluates, prioritizes, coordinates, negotiates, and completes the purchase of special lands properties. Special Lands Acquisition also coordinates the department's applications for state and federal land acquisition grants and administers the grant contracts. Purchases are made only from willing sellers and are based on market value land appraisals. DNR does not have the power of eminent domain for acquisition of natural areas; it cannot obtain lands for natural areas through condemnation.

DNR's Natural Areas Program

Upon successful completion of an acquisition by DNR, the lands involved are considered part of the natural areas system and become the management responsibility of the Natural Areas Program. The NAPs have been acquired for the protection of the priority species and ecosystems they contain and for research and education. NRCAs also generally contain priority species or ecosystems. Regional DNR staff are responsible for on-the-ground activities, while program staff in Olympia provide guidance and scientific expertise and ensure consistency of management. Recommendations also are sought from the Natural Heritage Advisory Council for decisions regarding important management activities. Additional information about the Natural Areas Program is presented in "Part 2. Status of the Statewide System of Natural Areas."

▲ Chopaka Mountain NAP in Okanogan County.